acuminatis, apice breviter ac obtuse acuminatis, remotiuscule crenulatis, opacis, glabris, subcoriaceis, supra olivaceis vel viridescentibus, subtus pallidioribus; venis primariis utrinque circiter 9, haud prominulis, secundariis parallelis ac fere aequaliter manifestis; paniculis glabris, axillaribus, usque 15 cm. longis, ramulis paucis, brevibus; floribus pedicellatis (pedicellis ± 2 mm. longis); sepalis glabris, ciliatis, exterioribus ovatis, circiter 2 mm. longis, interioribus concavis, 3.5 mm. longis latisque; petalis 4, oblongis, 2 mm. longis, extus glabris, fere ad basim ciliatis, intus bisquamulatis, squamulis paullo inflexis, sursum dense villosis; staminibus 6–8, basi tantum hirtellis; disco unilaterali, hippocrepiformi, glabro; pistillo minuto, trilobato, glabro.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, *Brass 13082* (TYPE), March 1939, alt. 850 m., primary rain-forest of flood plains (tree 18 m. high, 20 cm. diameter; flowers white); *Brass 13702*, alt. 900 m., March 1939, common in *Agathis* forest (subsidiary tree up to 20 m. high, 30 cm. diameter; leaves pale; flowers white).

Guioa crenifoliola with a hippocrepiform disk and fairly large flowers appears to belong to the section HEMIGYROSA. It is readily distinguished by the crenulate or crenate leaflets.

Guioa Koelreuteria (Blanco) Merrill, Spec. Blancoanae 241. 1918; Enum. Philip. Fl. Pl. **2:** 507. 1923; Radlk. Pflanzenr. 98f (IV. **165**): 1165. 1933.

Guioa Perrottetii (Blume) Radlk. Sap. Holl.-Ind. 39. 1877, Pflanzenr. 98f (IV. **165**): 1172. 1933.

SOLOMON ISLANDS: San Cristobal Island, Hinuahaoro, *Brass 2884*, September 1932, alt. 800 m., rain-forest (slender tree with white flowers and pink fruit). Previously reported from the Philippine Islands and Samoa.

Cupaniopsis Radlkofer

Cupaniopsis multijuga sp. nov.

Arbor gracilis, 3–5 m. alta; petiolo rhachique (folio unico tantum viso) 85 cm. longis, breviter tomentosis, subtus rotundatis, supra planiusculis, rhachi sursum convexa leviter sulcata; foliis usque 1 m. longis abrupte pinnatis, elongatis, multifoliolatis; foliolis circiter 60, usque 15 cm. longis, 2–2.5 cm. latis, chartaceis, fere subcoriaceis, suboppositis, lineari-lanceolatis vel lineari-oblongis, basi inaequalibus ac late cuneatis ad obtusis, apice obtuse acuminatis mucronulatisque, a basi remotiuscule obtusissimeque serratis ad crenatis (dentibus 5–9 mm.

distantibus), inferioribus petiolulatis (petiolulis circiter 5 mm. longis, tomentosis), superioribus sessilibus, supra praeter costam pubescentem glabris, subtus puberulis vel laxe minuteque pilosulis; venis primariis utrinque 20–24 oblique patentibus, in dentes arcuatim terminantibus (sed non excurrentibus), supra leviter impressis, subtus prominulis; venulis reticulatis perspicuis; paniculis axillaribus, 15–20 cm. longis, axi ramulisque tomentulosis; floribus pedicellatis; sepalis extus sericeo-pubescentibus, intus interdum consperse pilosulis, margine minute glandulosis, exterioribus 2 mm. longis, ovatis, obtusis, interioribus sub-orbicularibus vel oblongo-obovatis, 2.5 mm. longis, concavis; petalis circiter 2.5 mm. longis, oblongo-ovatis, basi ac dorso secus lineam medianam pilosulis, intus ad basim pilosulis, squamulis 2 petalum dimidium vix aequantibus apice deflexis ac villosis; disco glabro; staminibus 6–8, filamentis 1 mm. longis, pubescentibus vel breviter villosis; antheris 1.5 mm. longis, oblongis, apiculatis, connectivo dorso ad lineam medianam consperse piloso; ovario (rudimentario) dense villoso, 3-loculari.

BRITISH NEW GUINEA: Central Division, Kubuna, *Brass 5660* (TYPE), November 1933, alt. 100 m., rain-forest substage, uncommon (unbranched slender tree 3–5 m.; stem hollow or pithy; dense terminal cluster of spreading leaves up to 1 m.; many short axillary panicles of small cream-colored flowers).

This species appears to be closely related to *Cupaniopsis multidens* Radlk. It has, however, much longer leaves with crenate leaflets, a glabrous disk, and stamens with densely pubescent or short-villous filaments.

Cupaniopsis remotidens sp. nov.

Arbor ± 3 m. alta, caule simplici; petiolo saltem 10 cm. et rhachi ± 45 cm. longis, puberulis ad dense pubescentibus, ± striatis; foliis abrupte pinnatis, multifoliolatis; foliolis ± 36, breviter petiolulatis (petiolulis 3 mm. longis, pubescentibus), gradatim ad apicem sessilibus, alternis, vel superioribus subopppositis, 9–18 cm. longis, 3–4 cm. latis, oblongis, basi valide inaequalibus, obtusis, apice acutis ad subacuminatis, margine remotiuscule dentato-serratis (dentibus circiter 1 cm. distantibus), supra praeter costam puberulam glabris, subtus praecipue costa puberulis ad glabris; venis primariis utrinque circiter 18, obliquis, supra manifestis, subtus prominulis, inter venis trabeculatim venulosis; paniculis axillaribus, breviter tomentulosis; floribus praeter partes sub fructu relictis haud visis; pedicellis 3–4 mm. longis; sepalis adpresse puberulis; petalis (fragmento tantum viso) extus glabris, intus squamulis villosius-

culis auctis; disco angusto, glabro; capsula 3-loculari, obtuse trigona, fere obovoidea, ± 1.5 cm. longa lataque, extus breviter tomentosa, in sicco reticulata, intus adpresse villosa; seminibus circiter 12 mm. longis, 9 mm. latis, 6 mm. crassis, compressiuscule ellipsoideis, arillo circiter usque ad medium obductis.

BRITISH NEW GUINEA: Jawarere, *Brass 706* (TYPE), November 1925, alt. 300 m., rain-forest (slender unbranched tree 3 m. high, with crown of long spreading pinnate leaves; inflorescence axillary; fruit orange tinted).

This species seems most like *Cupaniopsis curvidens* Radlk., but according to the description, the latter is a more pubescent plant; the leaflets are pilose on the lower surface and the inflorescence is sericeous-villous.

Cupaniopsis reticulata sp. nov.

Arbor gracilis, 4–5 m. alta, caule simplici; petiolo 18 cm. et rhachi 60 cm. longis, breviter fulvo-tomentosis, supra planiusculis, sursum 2-sulcatis; foliis abrupte pinnatis; foliolis circiter 24, subcoriaceis, 16–26 cm. longis, 5.5–7.5 cm. latis, superioribus alternis, sessilibus, oblongis, basi oblique obtusis ad paululo rotundatis, apice acutis vel breviter acuminatis, inferioribus subopppositis, breviter petiolulatis (petiolulis inferioribus 8 mm. longis sursum gradatim abbreviatis), fere ellipticis, basi valde inaequalibus, apice acutis vel breviter acuminatis, omnibus margine deorsum integris vel repandis, sursum irregulariter sinuatis vel ± obsolete crenulatis, supra olivaceo-viridescentibus, praeter costam venasque primarias tomentulosas glabris, subtus brunnescentibus, laxe pilosiusculis sed costa venisque primariis breviter tomentosis; venis primariis utrinque 14–20, supra perspicuis, subtus prominentibus, venulis reticulatis prominulis; paniculis axillaribus, ± 20 cm. longis, axi, ramulis, bracteis linearibus pedicellisque breviter fulvo-tomentosis; pedicellis circiter 2.5 mm. longis; alabastris ± 3 mm. longis latisque; sepalis 5, extus dense adpresse pubescentibus, exterioribus oblongo-obovatis, circiter 3 mm. longis, interioribus latioribus; petalis in flore ♀ 5, in flore ♂ interdum 6–8, quam sepalis brevioribus, ovatis, 2–3-nerviis, margine irregulariter sinuato-dentatis, dorso extus basi puberulis, brevissime unguiculatis, basi intus bisquamulatis, squamulis petalum dimidium fere aequantibus, apice incurvo ac marginibus ± dense villosiusculis; disco glabro; staminibus 8–9, filamentis brevibus, breviter villosis, antheris 2 mm. longis, oblongis, apiculatis, glabris; ovario ovoideo, dense hirsuto, plerumque 3-loculari; stylo 2 mm. longo, hirtello; fructibus non visis.

BRITISH NEW GUINEA: Central Division, Mount Tafa, *Brass 4134* (TYPE), alt. 2100 m., May–Sept. 1933, common in tall foothill forests (slender unbranched tree 4–5 m. tall, crowned with numerous stiff pale pinnate leaves, and bearing many axillary panicles of pale brown flowers).

In several respects this species suggests *Cupaniopsis curvidens* Radlk. and *C. insularis* Radlk.; nevertheless, it appears to be distinct in the different margin of the leaflets, the more pubescent and slightly larger flower-buds, and the glabrous disk. The inflorescence has both staminate and pistillate flowers.

Cupaniopsis phanerophlebia sp. nov.

Arbuscula 2 m. alta; caule simplici, apicem versus villoso-tomentoso ac sparse folioso; foliis abrupte pinnatis, saltem 60 cm. longis; petiolo 30–35 cm. longo, villoso-tomentoso (indumento detergibili) ad glabrato; rhachi ± 30 cm. longa; foliolis 8–12, chartaceis, alternis, 18–32 cm. longis, 5.5–7 cm. latis, inferioribus breviter petiolulatis (petiolulis circiter 4 mm. longis, tomentosis), superioribus sessilibus, omnibus oblongo-lanceolatis, apice acutis vel leviter acuminatis, mucronulatis, basi inaequalibus, obtusis, margine integris vel leviter repandis, supra viridescentibus, glabris, subtus brunneo-viridescentibus, interdum praeter costam venasque primarias laxe pilosas glabris; venis primariis utrinque 17–25 obliquis, ad marginem arcuatis ac interdum confluentibus, supra impressis, subtus valde perspicuis, venulis subtus prominulis; paniculis axillaribus vel supra-axillaribus, ± 20 cm. longis, axi bracteisque fulvo-villosis, ramis pedicellisque fulvo-tomentosis; sepalis 5, oblongo-obovatis, adpresse pubescentibus, circiter 2.5 mm. longis; petalis 2.5 mm. longis, unguiculatis, extus infra medium sericeo-pubescentibus, intus bisquamulatis, squamulis villosiusculis, cum petalorum margine connatis; staminibus 6–8 quam petalis paullo longioribus; filamentis 2.5 mm. longis, villosiusculis, antheris 1.2 mm. longis, glabris vel consperse pilosis; ovario subgloboso, 3-sulcato, dense hirsuto, 3-loculari, sessile; stylo 1.5 mm. longo, ± columnari, tomentoso; fructibus ignotis.

BRITISH NEW GUINEA: Palmer River, 2 miles below Black River Junction, *Brass 7039* (TYPE), June 1936, alt. 100 m., rain-forest undergrowth (rare small unbranched tree 2 m. high; leaves scattered toward the apex of the stem).

This seems to be a very distinct species readily recognized by the slender entire leaflets, the short inflorescence, the shaggy pubscence remaining around the base of the inflorescence and the petiole. The apex of the style is barely, if at all, cleft into three very short lobes; the flow-

ers are past anthesis, sufficient tomentum remaining on the style so we are uncertain as to the form of the stigma.

Cupaniopsis Kajewskii sp. nov.

Arbor usque 10 m. alta; innovationibus fulvo-tomentosis; petiolo saltem 7.5 cm. longo, pubescente; foliis abrupte pinnatis; foliolis 7–13, alternis, subcoriaceis, petiolulatis (petiolulis 4–10 mm. longis, puberulis), 9–30 cm. longis, 5–12 cm. latis, oblongis ad ellipticis, basi obtusis, apice acutis ad acuminatis (acumine ± 1 cm. longo), margine basim versus undulatis, apicem versus ± denticulatis, supra glabris, subtus glabris vel ± puberulis; venas primariis utrinque 9–16, supra impressis, subtus prominulis, inter venis ± manifeste trabeculatim venulosis; paniculis supra-axillaribus, in fructu ± 20 cm. longis, axi ramulisque breviter tomentulosis ad glabratis; pedicellis circiter 5 mm. longis; floribus praeter partes sub fructu relictas haud visis; sepalis adpresse pubescentibus, margine petaloideis; petalis quam sepalis brevioribus extus ± ⅔ dorso adpresse hirtellis, intus basim versus ± hirtellis, bisquamulatis; squamulis angustis, villosiusculis cum petalorum margine connatis; disco glabro vel parce pilosulo; filamentis 2.5 mm. longis, villosiusculis; capsula 2.5 cm. longa, 2.3 cm. diametro, ellipsoidea, 3-loculari, loculicide dehiscente, estipitata, extus breviter tomentosa, intus adpresse parceque pilosa; semine ellipsoideo, 15–19 mm. longo, 10 mm. lato, 8 mm. crasso; arillo tenui, fere semen obtegente, margine subfimbriato vel irregulari.

SOLOMON ISLANDS: Bougainville, Kugimaru, Buin, *Kajewski 1781* (TYPE), May 1930, alt. 150 m., rain-forest (common small tree up to 10 m. high; leaves compound with 7–13 leaflets; fruit yellow when ripe, breaking into 3 equal parts, 2.5 cm. long, 2.3 cm. diameter; seeds black, covered with an orange-colored aril).

The species is perhaps nearest *Cupaniopsis stenopetala* Radlk., but the latter has cuspidate-acuminate leaves and glabrous petals. There is much variation in the size of the leaves of *C. Kajewskii,* the measurements given above represent the smallest lower pinna and the largest intermediate one (those at the apex of the leaf are usually a little smaller).

Cupaniopsis caudata sp. nov.

Arbor 10 m. alta; innovationibus fusco-tomentosis; petiolo 20 cm. longo, fusco-pubescente; foliis abrupte pinnatis; foliolis chartaceis, petiolulatis (petiolulis circiter 1.5 cm. longis, minute fusco-pubescentibus), alternis, 14–32 cm. longis, 7–10.5 cm. latis, oblongo-ellipticis, basi obtusis, apice longissime acuminatis (acumine usque 5 cm. longo, basim

versus 5 mm. lato), margine integris, ± undulatis interdum repandis, supra praeter costam puberulam glabris, subtus puberulis, in axillis inter costam ac venas inconspicue foveolatis; venis primariis utrinque 10–18, oblique patentibus ad marginem arcuato-anastomosantibus, supra manifestis, subtus prominulis, inter venas trabeculatim venulosis; paniculis supra-axillaribus, 15–25 cm. longis, adpresse fulvo-tomentosis; pedicellis ± 4 mm. longis, dense pubescentibus; alabastris 4–5 mm. longis latisque; sepalis 5, concavis, extus dense pubescentibus, intus glabris vel ad basim consperse pilosiusculis, margine petaloideis, parce vel haud glandulosis, exterioribus ovatis, 4 mm. longis, interioribus paullo majoribus obovato-suborbicularibus; petalis ± 3 mm. longis latisque, unguiculatis (ungue 0.5–0.8 mm. longo), margine irregulariter dentato-lobatis pilosisque, extus adpresse pilosis, intus sparse pilosis bisquamulatisque, squamulis angustis, villosiusculis cum petalorum margine connatis (quapropter, sententia nostra, marginem inferiorem inflexum simulantibus); disco intus ac margine ± piloso, extus plerumque glabro; staminibus 10, filamentis 2 mm. longis, villosiusculis; antheris 2 mm. longis, oblongis, apiculatis; ovario subgloboso, dense tomentoso, 3-loculari; stylo 2 mm. longo, subtrigono, stigmatibus ex apice decurrentibus.

SOLOMON ISLANDS: Ysabel Island, Sigana, *Brass 3454* (TYPE), January 1933, alt. 100 m., hill rain-forests (slender tree 10 m. tall; branchlets, rhachis and petioles brown; flowers green outside, cream-colored inside; ovary brown).

This species closely resembles *Cupaniopsis Kajewskii* in the leaf-venation and the pubescence of the petals. The latter lacks the caudate-acuminate leaf-apices and the fairly long petiolules of this species.

Cupaniopsis platycarpa Radlk. Sitzungsber. Bayer. Akad. **20:** 359. 1890; Bot. Jahrb. **56:** 290. 1920; Rendle, Jour. Bot. **61:** Suppl. 11. 1923; Radlk. Pflanzenr. 98f (IV. **165**): 1196. 1933.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, *Brass 13698*, March 1939, alt. 850 m., on flood-plain rain-forest (tree 22 m. high, 30 cm. diameter; seeds yellow).

Only the original collection, *Forbes 790* (immature fruiting material), of *Cupaniopsis platycarpa* Radlk. has been recorded. *Brass 13698* shows mature fruit and stunted or galled flowers. The dried fruit is 7.5 cm. long, 6 cm. broad, 3 cm. thick, with the stipe scarcely 1 cm. long, and the abruptly acuminate apex about the same length; the seed (cotyledons in the seed examined unequal and incumbent) is approximately 2.5 cm. long and broad, covered by an aril; often only one ovule develops.

The flowers are fairly large: calyx coriaceous, the outer sepals 3.5 mm. long, the inner about 5 mm. long and wide, rounded, sericeous appressed-pubescent outside and at the base within, minutely glandular on the glabrous petaloid margin; corolla mostly broken or partly eaten by insects, the outer surface of the petal remnants ± sericeous-pubescent, the inner and upper part not so densely pubescent and sometimes glandular, the lower covered by an apparently single short-villous or densely hirtellous scale, the latter not at all uniform in size and shape in the several flowers dissected; stamens eight, filaments short-villous from base to apex, anthers oblong, sometimes tending to be obtusely sagittate at the base. There is such a mass of pubescence (probably abnormal) within the flowèr that it is difficult to determine the features of the disk. In the original description the disk is characterized as glabrous, and in the mature fruit a narrow, glabrous somewhat lobulate ring surrounds the base of the stipe.

Lepiderema Radlkofer

Lepiderema melanorrhachis sp. nov.

Arbor gracilis, alta; ramulis nigris, apicem versus sulcatis, puberulis vel glabris; foliis abrupte pinnatis; petiolo et rhachi 10–23 cm. longis, nigris, puberulis vel minute pubescentibus; foliolis 5–10, petiolulatis (petiolulis ± 5 mm. longis, pubescentibus), suboppositis vel interdum alternis, superioribus majoribus, oblongis, usque 14 cm. longis, 5–6 cm. latis, basi cuneatis, inferioribus minoribus, ± ovato-ellipticis, circiter 5 cm. longis, 2.5–3 cm. latis, basi late obtusis vel subrotundatis, omnibus apice breviter ac obtuse acuminatis (acumine 0.5–1 cm. longo), chartaceis, integerrimis, costa atque interdum venis primariis (obliquis, utrinque 7–10) pubescentibus; inflorescentiis axillaribus, subfasciculatis, in fructu 10 cm. longis; axi ac ramis minute pubescentibus; floribus praeter partes sub fructu relictas haud visis; sepalis 1.5 mm. longis, ovatis ad suborbicularibus; petalis circiter 2 mm. longis, ± anguste obovatis; disco glabro; staminum cicatricibus intra discum 8; capsula parva, cum stipite 2–3 mm. 1 cm. longa, circiter 1 cm. lata, turbinato-pyriformi, stylo brevi terminata, utrinque glabra vel extus parce ac minute lepidota.

British New Guinea: Oroville Camp, Fly River (30 miles above D'Albertis Junction), *Brass 7432* (type), August 1936 (tall slender tree of forest canopy; branchlets and petioles black).

This species is most like the description of *Lepiderema papuana* Radlk. from Misoel Island. The latter differs in having glabrous leaves with spreading rather than obliquely ascending primary veins. In *L. melanor-*

rhachis there is a downy pubescence on the rhachis, the midrib, and the axis of the inflorescence.

Jagera Blume

Jagera pseudorhus (A. Rich.) Radlk. forma **pilosiuscula** Radlk. Sitzungsber. Bayer. Akad. **9:** 621. 1879, Pflanzenr. 98f (IV. **165**): 1240. 1933.

BRITISH NEW GUINEA: Western Division, Oriomo River, Wuroi, *Brass 5803*, common in small forest clumps on savannah (tree of open habit; 6–7 m. tall; foliage pale; fruit orange-yellow, seeds black); Daru Island, *Brass 6437*, rain-forest fringing the mangroves (small tree 3–5 m. with pale pinnate leaves and numerous axillary panicles of small brown flowers); Lake Daviumbu, Middle Fly River, *Brass 7508, 7943*, common in drier parts of the rain-forest (petals pink); Penzara, between Morehead and Wassi Kussa Rivers, *Brass 8476*.

This is an Australian species; the first collection cited above was identified by Mr. C. T. White. The other collections are unquestionably conspecific. Although the field notes indicate a fairly common tree in this region, we have not yet found a previous record of its occurrence in New Guinea.

Arytera Blume

Arytera divaricata F. v. Mueller, Trans. Philos. Inst. Vict. **3:** 25. 1859; Radlk. Sap. Holl.-Ind. 44. 1877, Sitzungsber. Bayer. Akad. **9:** 510, 552. 1879, Pflanzenr. 98f (IV. **165**): 1278. 1933.

Nephelium divaricatum Bentham, Fl. Austral. **1:** 467. 1863.

BRITISH NEW GUINEA: Western Division, Lake Daviumbu, Middle Fly River, *Brass 7620, 7743*, August and September 1936, rain-forest substage (tree with thin brown bark shedding in small hard scales; flowers white; lateral leaflets erect on the rhachis); Wassi Kussa River, Tarara, *Brass 8422*, December 1936, rain-forest (lesser canopy tree 12 m. high; fruit yellow, compressed).

The specimens cited above are altogether too close to the description of *Arytera divaricata* F. v. Muell. from Queensland to be regarded as a distinct species without further material for comparison. The leaflets are a little larger than the limit of size given by Radlkofer, Pflanzenr. l.c., but scarcely more than Bentham allows for *Nephelium Beckleri* Benth. which Radlkofer accepts as conspecific.

Another collection entirely similar in foliar characters but with shorter and more turgid capsular lobes is *Brass 8483*, Tarara, December 1936,

rain-forest substage (tree 8 m. high; fruit compressed, orange-yellow, aril red, seeds purple).

Arytera foveolata F. v. Mueller, Trans. Philos. Inst. Vict. **3:** 24. 1859; Radlk. Sap. Holl.-Ind. 44. 1877, Sitzungsber. Bayer. Akad. **9:** 510. 1879, Pflanzenr. 98f (IV. **165**): 1279. 1933.

BRITISH NEW GUINEA: Central Division, Kubuna, *Brass 5560,* alt. 100 m., ridge-forest (common substage small tree; leaves greyish underneath; numerous small white flowers).

The collection was determined as representing this species or affinity by Mr. C. T. White and we see no reason for changing it. The species was previously known only from Australia.

Mischocarpus Blume

Mischocarpus lachnocarpus (F. v. Muell.) Radlk. Sap. Holl.-Ind. 43. 1877, Sitzungsber. Bayer. Akad. **9:** 536, 647. 1879, Pflanzenr. 98f (IV. **165**): 1304. 1933.

BRITISH NEW GUINEA: Central Division, Ononge Road, Dieni, *Brass 3994* (det. C. T. White), May 1933, alt. 500 m., rain-forest (slender little tree with shining leaves and numerous small greenish white flowers); Western Division, Wassi Kussa River, Tarara, *Brass 8734,* rain-forest underbrush (slender tree 6–8 m. high; flowers green).

Previously known only from Australia. *Brass 8734* is not so tomentose as *Brass 3994,* otherwise the two are very similar.

Mischocarpus pyriformis (F. v. Muell.) Radlk. Sap. Holl.-Ind. 43. 1877, Sitzungsber. Bayer Akad. **9:** 536, 647. 1879, Pflanzenr. 98f (IV. **165**): 1305. 1933.

BRITISH NEW GUINEA: Western Division, Wassi Kussa River, Tarara, *Brass 8508,* December 1936, common in rain-forest substage (tree; leaf-margins recurved; flowers cream-colored).

Although the leaves of *Brass 8508* are lanceolate rather than ovate-lanceolate and a little longer than those of most of the Australian material of *Mischocarpus pyriformis* (F. v. Muell.) Radlk., the collection seems to agree in all other characters with this Australian species.

Mischocarpus montanus C. T. White, Proc. Roy. Soc. Queensl. **47:** 56. 1936.

NORTHEASTERN NEW GUINEA: Morobe District, Sarawaket, *Clemens 5232,* January 31, 1937.

Mischocarpus montanus C. T. White was based on a collection in flower (*Brass 2293*), from North Queensland. *Clemens 5232* is a fruiting specimen; nevertheless, it appears to be a reasonably good match for

the type-material of this species. The clavate-pyriform fruit is 1.5 cm. long (not yet fully mature) and 0.5 cm. diameter.

Mischocarpus macrobotrys sp. nov.

Arbor ± 20 m. alta; ramulis glabris; innovationibus fulvo-puberulis; foliis usque ± 70 cm. longis, abrupte pinnatis; petiolo atque rhachi glabris, striatis; foliolis 11–12, alternis, glabris, opacis, subcoriaceis, petiolulatis (petiolulis 0.8–1.4 cm. longis, basi tumidis ac rugosis), oblongis (8–21 cm. longis, 3.3–7 cm. latis, in specimine typico 10–13 cm. longis, circiter 4 cm. latis), utrinque angustatis, apice obtuse ac breviter subacuminatis, margine undulatis, venis primariis utrinque ± 14, patenti-adscendentibus marginem versus arcuatis, venularum reti inaequali laxa, subtus in axillis inter venas atque costam domatia pluria gerentibus; paniculis ad ramorum apices congestis, ± dense puberulis vel minute pubescentibus, amplis, ± 45 cm. longis, multifloris; sepalis 0.8 mm. longis, deltoideis, acutis, minute puberulis; petalis 1 mm. paululum superantibus, vix unguiculatis, intus puberulis atque supra unguem bisquamulatis, squamulis hirtellis; disco glabro, sublobato vel undulato; staminibus brevibus; filamentis 1 mm. longis, hirtellis; antheris glabris; pistillo 2.5 mm. longo, adpresse puberulo; ovario obovato, circiter 1 mm. longo, estipitato, triloculari; stylo ± 1 mm. longo, stigmate recurvato-trilobo.

BRITISH NEW GUINEA: Lake Daviumbu, Middle Fly River, *Brass 7618* (TYPE), August 1936, rain-forest substage (tree; leaves smooth and shining, to ± 70 cm. long; flowers cream-colored).

In several characters this species suggests *Mischocarpus paradoxus* Radlk. In the latter, there are only seven leaflets to a leaf, the inflorescence is up to 14 cm. long, and clustered on the more mature branches, the last character is emphasized both in the key to the genus and in the description of the species. In *M. macrobotrys*, on the other hand, the inflorescence is much more ample, and the panicles are clustered around the tips of the young growth.

Mischocodon Radlkofer

Mischocodon reticulatus Radlk. Bot. Jahrb. **50:** 79. 1913, Pflanzenr. 98f (IV. **165**): 1328. 1933.

NORTHEASTERN NEW GUINEA: Sattelberg, *Clemens 1933A, 3093*, March and May 1936, alt. ± 100 m.

Only the original staminate collection has been recorded. In the flowers of *Clemens 1933A*, the stamens are about 2 mm. long, the pistil is stipitate, the stipe being 2 mm. long, the ovary (3–4-loculed, with one

ascending ovule in each locule) about as long and 3–4-angled, and the style 1.5 mm. long, with 3–4 scarcely longer stigmatic lobes.

Dodonaea Linnaeus

Dodonaea polyandra sp. nov.

Arbor gracilis, 5–7 m. alta, glabra; ramulis compressis, vix angulatis; cortice viscoso; foliis simplicibus, petiolulatis (petiolulis 0.6–1.5 cm. longis, viscosis), anguste lanceolatis ad late lanceolatis (6.5–12 cm. longis, 1.8–4 cm. latis), utrinque angustatis, basi sensim attenuatis, apice plerumque breviter ac obtuse acuminatis, margine integris vel subundulatis, paullo revolutis, chartaceis, supra olivaceis vel olivaceo-viridescentibus, viscosis, subnitidis, subtus interdum paullo pallidioribus, crebre glandulosis; costa subtus ad basim foliorum prominente; venis primariis utrinque 8–10 oblique patentibus, ad marginem arcuatim confluentibus, haud prominulis; inflorescentiis terminalibus in ramis ramulisque, brevibus, usque 4 cm. longis, subcorymbiformibus, viscosis; floribus (♀) longe pedicellatis (pedicellis circiter 1 cm. longis); sepalis 4–5, lineari-oblongis, ± 3 mm. longis, +1 mm. latis, apice villosis; ovario trigono, 1.5 mm. longo, 1 mm. lato, dense viscoso; stylo ± 5 mm. longo, apice 2–3-fido vel indiviso; capsula suborbiculari, alis loculorum latitudinem subaequantibus, 2.5 cm. lata 2–2.5 cm. longa (alis inclusis), in sicco subfusca, 2–3-loculari; seminibus 2.5 mm. longis, 2 mm. latis, fere 2 mm. crassis, nigris, nitidis, plerumque membrana albicante tenuissima pellucida praesertim ad hilum corrugata indutis; floribus (♂): sepalis ut in flore ♀ sed brevioribus; staminibus 11–15, filamentis 0.5–1 mm. longis, antheris circiter 2.5 mm. longis, apiculatis; pistillo rudimentario.

British New Guinea: Western Division, Wassi Kussa River, Tarara, *Brass 8379* (type), *8379A*, December 1936, abundant in rain-forest fringing streams (very slender tree 5–7 m. high, dioecious).

This species closely resembles some forms of *Dodonaea viscosa* (L.) Jacq. It differs in having 12–15 stamens (the species of the genus have ordinarily 5–8 stamens), and shining seeds, scarcely at all compressed, and covered by a thin transparent membrane much wrinkled toward the callus surrounding the hilum.

Harpullia Roxburgh

Harpullia cauliflora K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 424. 1900; Radlk. Pflanzenr. 98f (IV. **165**): 1440. 1933.

Netherlands New Guinea: Bernhard Camp, Idenburg River, *Brass 13802*, April 1939, alt. 60 m., rain-forest of alluvial plains (subsidiary tree 20 m. high, with few upright myrmecophilous branches; fruit red, borne on the old wood).

Having no authentic material for comparison, we hesitantly assign this collection to *Harpullia cauliflora* Radlk. It differs in the following points: leaflets chiefly alternate, subequilateral to inequilateral at base; capsules short stipitate; sepals carinate; and the branches obviously myrmecophilous.

Harpullia myrmecophila sp. nov.

Arbor parva, 2–4 m. alta; ramulis ac petiolis puberulis, intus fistulosis; foliis abrupte pinnatis, irregulariter circiter 4-jugis; petiolo 9–11 cm. et rhachi ± 28 cm. longis; foliolis 7–8, petiolulatis (petiolulis 5–10 mm. longis), alternis, coriaceis, utrinque glabris vel costa venisque puberulis, nitidulis, inferioribus brevibus (7.5–15 cm. longis, 5–8 cm. latis), superioribus longioribus (± 24 cm. longis, 9 cm. latis), omnibus ellipticis, basi subaequalibus, apice ± abrupte acuminatis (acumine 0.5–1.2 cm. longo), integerrimis, venis primariis utrinque ± 10, arcuato-adscendentibus, supra perspicuis, subtus prominentibus, prominule reticulato-venulosis; inflorescentiis supra-axillaribus, in fructu usque 15 cm. longis, breviter fulvo-tomentulosis; pedicellis 5 (fructigeris ad 9) mm. longis; alabastris subsphaeroideis; sepalis 5, basi paullo connatis, ovato-ellipticis, 5 mm. longis, 3 mm. latis, obtusis, utrinque brevissime tomentulosis; petalis 5, carnosis, glabris, ex oblongis subcuneatis, 10 mm. longis, 3 mm. latis; staminibus 5, antheris lineari-lanceolatis, basi excisis; disco pumilo, tomentuloso; ovario 1 mm. longo, compresse ellipsoideo, tomentuloso; stylo brevi (0.5 mm. longo); capsula suborbiculari ad paululo obovata, 2.4–3 cm. longa, 2.2–2.5 cm. lata, vix stipitata, breviter apiculata, glabrata, intus glaberrima; semine in loculo solitario, arillo usque ad apicem obtecto.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, *Brass 13414* (TYPE), March 1939, alt. 850 m., on the bank of a stream in the rain-forest (sparse tree 4 m. high; branches myrmecophilous; fruit red; seeds yellow); *Brass 13285*, alt. 850 m., March 1935, rain-forest seral growths (slender tree 2 m. high; flowers greenish white).

Harpullia myrmecophila belongs to the subgenus EUHARPULLIA Radlk., section THANATOPHORUS Radlk. The somewhat crooked branchlets are hollow, and along the petiole and rhachis are numerous very small openings. The leaves are very much like those of the collection assigned to *H. cauliflora* K. Schum. & Lauterb., but the capsules are dissimilar both in form and in size.

Harpullia vaga sp. nov.

Arbor parva, 7–8 m. alta; ramulis glabris; foliis abrupte pinnatis;

petiolo ± 8 cm. et rhachi 15–20 cm. longis, glabris, teretibus; foliolis 4–9, glabris, chartaceis ad subcoriaceis, breviter petiolulatis (petiolulis 5–7 mm. longis), alternis vel subopppositis, 9.5–15 cm. longis, 4–5 cm. latis, lanceolato-oblongis, apice acutis ad subacuminatis, basi subaequalibus, cuneatis ad obtusis, integerrimis; venis primariis utrinque 9–10, arcuato-adscendentibus, supra manifestis, subtus prominentibus, ± manifeste reticulato-venulosis; inflorescentiis verisimiliter axillaribus, axi fructigero 36 cm. longo; ramulis pedicellis calyceque fulvo-tomentulosis; sepalis ovatis, 4 mm. longis, obtusis; staminum cicatricibus 5; disco tomentuloso; capsula suborbiculari, 2.3 cm. longa, 2.5 cm. lata, breviter stipitata (stipite circiter 3 mm. longo), apice emarginata, extus glabrescente, intus glabra, crustacea; semine in loculo solitario, ex toto arillo involuto.

SOLOMON ISLANDS: Guadalcanal, Uulolo, Tutuve Mountain, *Kajewski 2544* (TYPE), April 1931, alt. 1200 m., rain-forest (common small tree up to 7 or 8 m. high; fruit bivalvular, 2.5 cm. long, 2.5 cm. diameter).

The species belongs to the subgenus EUHARPULLIA Radlk., Section THANATOPHORUS Radlk. It differs from *Harpullia cupanioides* Roxb. in the somewhat longer capsule, and the dull leaves.

CORNACEAE (det. Danser)

Mastixia Blume

Mastixia philippinensis Wangerin, Rep. Sp. Nov. **10:** 273. 1912; Merr. Enum. Philip. Fl. Pl. **3:** 241. 1923.

SOLOMON ISLANDS: Bougainville, Koniguru, Buin, *Kajewski 2021, 2086*, August and October 1930, alt. 850 m. and 950 m.; Guadalcanal, Uulolo, Tutuve Mountain, *Kajewski 2547*, April 1931, alt. 1200 m.

The field notes are here summarized: tree up to 30 m. high, with a fairly long trunk; petals green; stamens cream-colored, falling off after the buds open; fruit blue when ripe, oblong, 2.5 cm. long, 1.5 cm. diameter. The natives say this is a very strong timber used in building their large Garamut or ceremonial houses. Previously known from the Philippine Islands.

Since this is the only species in our material with a range-extension we have credited the work on the family to Dr. B. H. Danser who, some time ago, determined *Kajewski 2021*. The other collections cited appear to be conspecific.

ARNOLD ARBORETUM,
HARVARD UNIVERSITY.

THE ARNOLD ARBORETUM DURING THE FISCAL YEAR ENDED JUNE 30, 1940

AS IN PREVIOUS YEARS the Arboretum has been the fortunate recipient of generous extra-budgetary support which enables the staff to accomplish much needed work that cannot be taken care of properly on the basis of the regular institutional income. Unrestricted gifts to the Cultural Purposes Fund amounted to $7757.00 from 382 individuals, an increase of $657.00 over similar receipts in the preceding year. Belated returns from the Hurricane Rehabilitation appeal of October, 1938, increased that restricted fund by $60.00. The Massachusetts Society for Promoting Agriculture generously renewed its grant of $500.00 to finance botanical-horticultural explorations in China, and this special fund was increased by a gift of $450.00 from Mr. Harrison W. Smith of Tahiti. Special contributions amounting to $3525.00 were made to support the George B. Emerson Fellowships I, II, and III, $1000.00 of this being from an anonymous donor. These Fellowships were so named in honor of the individual who originated the Arboretum idea. For special travelling expenses $790.00 was received, $590.00 of this amount being an anonymous gift, and $200.00 from Mrs. Edwin F. Atkins for special work at the Atkins Institution. A member of our Visiting Committee generously continued his annual gift of $500.00 for the care of conifers. A special grant of $1500.00 has been received from the Milton Fund of Harvard University to be used under my direction for completing work on our extensive collections of plant material from southern China. At the Atkins Institution, $600.00 was received as grants-in-aid for visiting students. During the year the permanent endowment funds were increased by the receipt of $12,500.00 from the estate of the late Miss Grace L. Edwards of Boston, and $1205.18 was added from income to two special endowment funds in accordance with the original terms of gift.

Retirements and Appointments. — At the end of December, 1939, Miss Ethelyn M. Tucker retired after forty years of service to the Arboretum, first as an assistant, later in charge of the library. Throughout her long term of employment Miss Tucker rendered valuable and efficient services to the institution and thoroughly established her standing in the field of botanical bibliography through the preparation and

publication of the comprehensive three volume "Catalogue of the Library of the Arnold Arboretum." At the end of August, 1940, Professor Alfred Rehder will retire, having passed the age of seventy-five years, this being the ultimate age at which employment may be continued. He has served the institution with outstanding distinction for forty-two years. At the same time Dr. J. H. Faull retires as Professor of Forest Pathology, after twelve years efficient service in that position. Fortunately for the best interests of the Arnold Arboretum both Professor Rehder and Professor Faull plan to continue work on special problems in which they are personally interested. Mrs. Janet Sellars was promoted to the position of Librarian, and Mr. V. Asmous was appointed Assistant Librarian. To succeed Professor Rehder as Curator of the Herbarium, Dr. A. C. Smith, of the New York Botanical Garden, has accepted appointment as of October 1, 1940. No appointment can yet be made in forest pathology because of the necessity of taking care of the genetics situation, which was left in a greatly depleted condition following the death of Dr. E. M. East in 1938.

Buildings and Grounds. — The regular procedure has been followed as in past years with the objective of maintaining all buildings in good condition and in not only maintaining but also increasing the attractiveness of the grounds and plantings. A major operation, the widening of Bussey Street, is being accomplished by the City of Boston, involving the construction of a new masonry boundary wall along the south side adjoining the Peters Hill section. This, when completed, will be a great improvement. Various repairs to the road surfaces, benches, walls and entrance gates have been accomplished by the Park Department. During the past winter most of the work of removing stumps and fallen trees, mute reminders of the damage caused by the great hurricane of September, 1938, was practically completed. Through the acquirement of some additional mechanical equipment the efficiency of the outside staff has been increased. We are now, for the first time, in a position where the cutting and removing of hay is handled by our own staff without the necessity of our contracting for this necessary annual task with outside parties. Approximately 350 conifers, three to four feet high, were planted in the fall in connection with our hurricane damage rehabilitation work, the mortality being gratifyingly small in spite of an unusually dry autumn and a severe winter. Approximately 200 additional hemlocks, now being grown in our nurseries, will be planted on Hemlock Hill in the fall of 1940. During the year all survey work appertaining to the detailed mapping of the Arboretum plantings was completed. Final

drawings were made of 30 panels, and these were checked for accuracy, making a total of 82 panels completed. The remaining 16 will be finished during the coming winter. For a third consecutive year, the poison ivy eradication campaign was viorously prosecuted, the net results being a great reduction of this noxious plant in many parts of the grounds.

Horticulture. — The *Forsythia* planting at the end of the lilac collection, cut to the ground two years ago is now in excellent condition, and henceforth should make a most attractive annual display. Another bank of *Forsythia intermedia spectabilis* has been planted on the slope back of the Administration Building facing the Arborway, 75 individual plants having been used. As many unneeded duplicate *Weigelia* plants were removed from this rather neglected collection last fall, it became necessary to cut most of the remaining plants to the ground to stimulate new growth. Through the courtesy of Mr. F. W. Schumacher, a fine collection of colored water lilies was received and planted in the ponds near the shrub collection. During the winter all of the remaining old and decrepit willows were removed along the Arborway wall, red maples and sour-gum being planted in their place. The rose collection was carefully checked, many duplicates discarded, and through the courtesy of Messrs. Bobbink and Atkins, forty species and varieties were added, the collection now containing about one hundred species and varieties, this being a botanical collection rather than a horticultural one. A collection of *Hemerocallis* was presented by the New York Botanical Garden and an assortment of tree peonies by Mr. John C. Wister of Philadelphia. The largest single accession was a shipment of 115 plants acquired from Hillier's Nursery in England and delivered some months after the war commenced; a number of species in this lot are new to American collections. A total of 283 species and varieties were transferred from the nurseries to their permanent places in the grounds, most of which represent species new to the collections.

In the collection of hybrid azaleas on Bussey Hill are many excellent varieties, but the plantings are now badly crowded. In the fall, fifty of these were transferred to the slope opposite the hornbeam collection, and more will be transplanted later in order to make a colorful display among the oaks.

An unusual amount of pruning had to be done in the spring and summer, partly on account of hurricane damage that could not be handled previously, partly because the past winter was an unusually difficult one, much winter injury occurring, particularly in March.

From the Arboretum plantings 552 packets of seeds, and from the cooperative Arnold Arboretum - Fan Memorial Institution Yunnan expedition collections, 824 packets, a total of 1376 packets were distributed to institutions and individuals in the United States and nine foreign countries. At the same time 4115 living plants and 946 lots of cuttings and scions went to various institutions and individuals in the United States and four foreign countries. Among the plants distributed were 3000 hybrid ornamental crabapple seedlings to 337 institutions and individuals. These were grown in connection with Dr. Sax's hybridization work and were distributed with the understanding that the Arboretum has the right to take propagating material from any plant that may prove to be of exceptional horticultural value. In eliminating unwanted duplicate material from the general plantings, several truck loads of plants were presented to Boston University, Tufts College, the University of New Hampshire, and the Boston Park Department. Many other public institutions received living plants in the ordinary course of plant distribution.

Accessions to the Arboretum include 2114 living plants, 140 packets of seeds (including only those actually planted in the propagating houses), 721 packets of Yunnan seeds from the Fan Memorial Institute of Biology, these mostly redistributed because the species represented are not adapted to New England climatic conditions, and 19 lots of cuttings and scions.

Having encountered various difficulties in the past in our attempts to disseminate recently introduced plants or those of outstanding horticultural value through the medium of scions and cuttings, we have now adopted a policy of actually growing rare items for distribution as established plants. The recipients are thus placed in a position so that they can do their own propagating from established stock. It is believed that this policy will expedite the establishment in other centers of important horticultural forms introduced by the Arboretum.

In connection with the horticultural activities of the institution, many popular lectures have been given, the rapidly increasing correspondence regarding plants and plant problems has been taken care of, and the Bulletin distribution has been increased, the mailing list now exceeding 2000 names. An interesting development has been the rapidly increasing use that is being made of our source list of desirable horticultural plants.

Cytogenetic Laboratory. — The work in experimental cytology under Dr. Sax has included an extensive analysis of differential sensitivity of cells to X-rays. X-ray sensitivity during the nuclear cycle in